Ref. # 116

631
Misc

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

INSECT INFESTATIONS OF THE KANIKSU NATIONAL FOREST 1937

by
Tom T. Terrell
Scientific Aide

SUMMARY AND RECOMMENDATIONS
James C. Evenden

Forest Insect Laboratory
Coeur d'Alene, Idaho
March 1, 1938

U. S. GOVERNMENT PRINTING OFFICE: 1938 J 76133

BUREAU of Entomology and Plant Quarantine
RECEIVED
☆ MAR 2 - 1938 ☆
FOREST INSECT LABORATORY,
PORTLAND, OREGON

File No. .....
Noted by FPK
JMW
RLF
WJB

Refer to file
Studies D-2E

Forest Insect Laboratory
Coeur d'Alene, Idaho
Mar. 1, 1938

Dr. F. C. Craighead
Washington
D. C.

Dear Dr. Craighead:

There are enclosed two copies of Mr. Terrell's report of the 1937 survey on the Kaniksu National Forest. The extra copy is for transmittal to the Washington office of the Forest Service.

Though there are no overly alarming situations on the Kaniksu Forest at this time, there are several units which warrant careful consideration and rechecking during the coming season.

I am sorry that we have been delayed in the submission of our survey reports. This has been due to the fact that we have been obliged to use Mr. Terrell on other work as well as to the fact that serious illness at his home necessitated his absence for a few days. We are taking steps to provide for the future submission of all such reports soon after the completion of our survey program. Mr. Terrell's report of the Coeur d'Alene survey is now practically complete and will be submitted in a few days.

Your comments and criticisms of the enclosed report are requested.

Respectfully yours,

James C. Evenden
Entomologist

Enclosures

cc to:
Mr. Miller
Mr. Keen ✓
Mr. Beal

INSECT INFESTATIONS OF THE KANIKSU NATIONAL FOREST 1937

A survey of the white pine stands of the Kaniksu National Forest to determine the degree of mountain pine beetle infestation and other insect damage was instituted during September 1937. During the course of the survey 4,167 acres of sample strip were run on 202,680 acres of timbered area. Although this is but a two-percent sample of the area, it is felt that the data secured are representative of the stands because the sample strips were plotted to secure an average cross section of each area surveyed.

The white pine type on the Kaniksu was found to occur in more or less separated areas. In most instances each separate area has been set up as a unit to which the data secured on that area have been applied. The method of securing the data consisted of examining sample strips of timber one chain in width on which all the current mountain pine beetle-killed white pine and all green white pine were counted. These data were recorded for each acre of strip, and data secured on the total acres of strip examined in a unit were applied to its total acreage.

The following table lists the units covered during the 1937 survey and gives the data secured. The average for the forest is included in the total. The inclosed map will show the location of the units surveyed.

Table I

Unit	Acres in unit	Acres of strip	Green stand per acre WP	Attacks per acre	% of stand killed	Total infested trees
Delyle Creek	2,300	101	11.6	.010	.09	23
Trout Creek T. 58 N.	2,900	102	12.9	.206	1.60	597
Rapid Lightning Cr. A	880	37	35.7	1.840	5.15	1,610
Rapid Lightning Cr. B	10,700	269	20.6	.163	.79	1,744
Lightning Creek	15,000	327	10.8	.015	.14	225
Smith Creek	7,700	211	12.5	.033	.26	254
Caribou Creek	6,700	151	20.7	.053	.26	355
Pack River	6,800	84	21.4	.119	.56	809
Boundary & Blue Joe	5,300	113	8.9	.026	.29	138
Trout Cr. T. 63 N.	1,300	8	3.5	0	0	0
Fall Creek	5,400	127	2.2	0	0	0
Lost Creek	800	18	6.5	0	0	0
Myrtle Creek	5,600	89	11.8	.022	.19	123
Ball Creek	5,200	94	18.5	.128	.69	666
Twenty Mile	1,200	38	17.2	.079	.46	95
Deer Creek	1,200	43	7.3	.093	1.27	112
Upper West Branch	3,400	87	13.5	.241	1.78	819
Lower Lamb Creek	600	27	5.6	.000	0	0
Bismark Mountain	1,000	27	15.3	.074	.48	74
Goose Creek	6,900	250	7.6	.016	.21	110
Black Tail Peak	6,600	122	10.7	.115	1.07	759
Gold Creek	7,800	248	9.6	.028	.29	218
Sullivan Creek	8,400	140	12.9	.050	.39	420
Lion Creek	7,200	154	24.	.143	.59	1,029
Upper Priest River	7,700	173	11.	.052	.47	400
Caribou Cr. T.63N., R. 4 W.	5,900	95	2.7	.010	.37	59
Trapper Creek	4,400	61	2.3	.016	.69	70
Two Mouth Creek	8,500	147	9.5	.020	.21	170
Indian Creek	12,700	199	13.0	.030	.23	381
Hunt Creek	7,900	151	9.8	.040	.41	316
Soldier Creek	9,500	90	9.5	.044	.46	418
North Fork East River	5,800	141	14.4	.021	.14	122
Mid. Fork East River	8,400	76	12.1	.013	.11	109
Ojibway	11,000	167	8.5	.024	.28	264
Totals and Averages	202,680	4,167	11.8	.062	.52	12,498

In the following pages the units will be given separately because in some instances there are important factors relative to the infestations that are innate to each unit.

DELYLE CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
2,300	11.6	.010	.09	23

The Delyle Creek unit lies in the heads of Delyle and Dry Creeks in T. 54 N., R. 2 E. Only a very light infestation was recorded in the stand, which runs heavily to subalpine and hemlock types.

TROUT CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
2,900	12.9	.206	1.60	597

In sections 26, 27, 29, 32, 33, and 34, T. 58 N., R. 1 E. of the Trout Creek unit there is a rather severe infestation. While the average over this relatively small area is .206 infested tree per acre, the infestation is largely confined to parts of Sections 26, 27, 33, and 34, where it averages .3 infested tree per acre. All of the timber in the area is privately owned, and logging operations are now in progress on an extensive scale.

RAPID LIGHTNING CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
A 880	35.7	1.84	5.15	1619
B 10,700	20.6	.163	.79	1744

The Rapid Lightning Creek unit has been given in two separate parts (A and B) because in a small area there is a concentration of severe infestation. The area, which is mostly confined to Section 1, is estimated to contain 880 acres. Groups of from 15 to 30 heavily attacked trees were found in the heavily timbered, swampy creek bottoms. Logging operations were in progress to the south, where numerous cull logs were found to be infested.

The remaining timbered area of the Rapid Lightning drainage was found to be rather heavily infested. Logging operations in progress from two Diamond camps are taking the timber out. However, in some areas hundreds of cull logs have been left, of which about 20 percent are infested with bark beetles.

LIGHTNING CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
15,000	10.8	.015	.14	225

Although Lightning Creek has suffered severe losses in the past from insect attack, the present infestation is very light. As the timbered area lies to the south and east of the Rapid Lightning Creek infestation, it is well isolated by high ridges.

SMITH CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
7,700	12.5	.033	.26	254

Control measures were instituted on 1,147 acres of white pine timber in the Smith Creek drainage during the spring of 1937. A total of 377 infested trees were spotted, which indicated an infestation of about .33 infested tree per acre. While the data secured on the entire acreage during the survey showed an infestation of .033 infested tree per acre, strips run through the controlled area showed .044 infested tree per acre. The area on which control was instituted was a center of high infestation, while the adjacent areas, which run largely to hemlock type, contained very little infestation. Although the area controlled still has a higher infestation per acre than the entire unit, it contains the bulk of the white pine in the drainage and seems to be particularly susceptible to insect attack. While the control project was abandoned because of fire hazard before completion, an 87 percent reduction occurred, which under the circumstances seems very satisfactory.

CARIBOU CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
6,700	20.7	.053	.26	355

Caribou Creek, a tributary of Pack River, contains some very good stands of white pine. Considerable logging has taken place in the drainage, and logging operations will probably continue for some time on a clean-cut basis. It is felt that the figure of .053 infested tree per acre is somewhat high, as a large part of the trees recorded were in one small group of scorched trees in a burn.

PACK RIVER

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
6,800	21.4	.119	.56	809

About 20 percent of the infestation in Pack River is in windfalls, and while it is somewhat higher than other units along the west side of the Kootenai River, it is not serious. Heavy parasitism was recorded in infested trees examined. Logging operations now in progress on a clean-cut basis will probably tend to keep the infestation from increasing.

BOUNDARY CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,300	8.9	.026	.29	138

The Boundary Creek unit consists of several isolated patches of pine in Boundary and Blue Joe Creeks. The stand runs largely to spruce, hemlock, and cedar, with scattering mature white pine. Considerable evidence of past insect damage was seen in Blue Joe Creek near boundary post 199.

TROUT CREEK T. 63 N.

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
1,300	3.5	.000	0	0

Although the type map shows the above acreage of white pine in Trout Creek, the timber is very sparse. White pine seemed to be confined to a strip about ten chains wide in the creek bottom. No infected trees were found.

No sample strips were run in Canyon Creek, as the area was so inaccessible. Three men walked seven and one-half miles and examined all of the timber that could be found, however, and stated that only a narrow strip of white pine extended along the bottom of the creek. The pine was very scattered, with much reproduction. No attacks were recorded.

FALL CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,400	2.2	0	0	0

A large part of the white pine timber in the Fall Creek unit has been logged off, and the remaining stand is largely spruce and hemlock. Although no infestation was recorded in standing timber, three infested cull logs were found near recent logging operations.

LOST CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
800	6.5	0	0	0

No infestation was recorded in Lost Creek, which contains a small area of pine east of Burton Peak.

MYRTLE CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,600	11.8	.022	.19	123

There was very little infestation recorded in Myrtle Creek, although examinations were made as far as the Lion Creek pass.

BALL CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,200	18.5	.128	.69	666

There is a relatively heavy concentration of attacks between mile posts 3 and 5 along the creek bottom. An examination of this area was made along the creek up to six and one-half miles from the road. Practically all of the timber near the creek was examined and the infestation recorded for 1935, 1936, and 1937. As near as could be determined, 23 trees were attacked in 1935, 15 in 1936, and 29 in 1937. The 1937-attacked trees were largely late attacks with brood in the egg stage. One group of 16 1937-attacked trees was found near the Ball Creek cabin. The infestation seems to be largely confined to a strip along the creek bottom, as only a few infested trees were recorded on the slopes. As in nearly all of the east side drainages, a considerable amount of older kill has occurred in large groups along the creek.

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
1,200	17.2	.079	.46	95

This area is a small, isolated block of timber east of the Shiloh Ranger Station. Although it is fairly heavily timbered, very little infestation was recorded. This is perhaps due to its isolated nature.

DEER CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
1,200	7.3	.093	1.27	112

The Deer Creek unit is a small area of white pine in the northeast corner of the forest east of the Moyni River. It is felt that the estimate of .093 infested tree per acre is too high, as the only infested trees were found in one group of four by the side of a newly constructed road. The timber in the area runs largely to spruce and hemlock and seems to have very little infestation.

UPPER WEST BRANCH

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
3,400	13.5	.241	1.78	819

A very heavy concentration of attacks was found along the creek bottom in Sections 23 and 14, T. 35 N., R. 45 E., on the Upper West Branch of Priest River. The infestation occurs in groups of very heavily attacked trees. The entire area is being logged, which is expected to be completed in 1938. A roadside strip of timber 400 feet wide is being left, however, and as this strip extends through and includes most of the heavily attacked trees in the bottom, the logging operations will probably have very little beneficial effect on removing the infestation.

LOWER LAMB CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
600	5.6	0	0	0

The Lower Lamb Creek area is a small, isolated spot of rather young timber. There were a large number of faded and red-topped trees seen in the area from a distance, but upon closer examination they were found to have been killed by some agent other than insects. It is believed that overstocking and drought were responsible for a large percentage of the damage.

BISMARK MOUNTAIN

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
1,000	15.3	.074	.48	74

Bismark Mountain is a small, isolated area of well-stocked white pine north of Lower Lamb Creek. Strip data showed no serious infestation in the area.

GOOSE CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
6,900	7.6	.016	.21	110

The Goose Creek unit includes a large number of scattered areas of white pine type near the Pelke Ranger Station. Although it is just south and nearly adjacent to the heavy spot of infestation in the Upper West Branch, no more than a light infestation was recorded.

BLACK TAIL PEAK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
6,600	10.7	.115	1.07	759

This area, which has been partially logged, has suffered a considerable loss from old insect damage and burns. The remaining pine

is mostly confined to strips along the creek bottoms and is mixed with cedar and hemlock. Although a higher than normal infestation was found in the area, it is believed due to the depleted condition of the stand, which has allowed the timber to suffer from exposure.

GOLD CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
7,800	9.6	.028	.29	218

Although there is a very low degree of infestation present in this area, it has suffered heavily in the past. The remaining pine seems to occur in somewhat isolated patches in a spruce and hemlock stand.

SULLIVAN CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
8,400	12.9	.050	.39	420

The Sullivan Creek unit includes the tributary drainage of Lookout Creek, Pass Creek, and Stoney Creek, as well as other small drainages of Sullivan Creek. The entire area has suffered heavily from past insect damage, which has killed a large percentage of the stand. The remaining stand is but lightly infested with no apparent concentrations of attacks. As in most depleted areas the presence of root fungi infections was noticeable.

LION CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
7,200	24	.143	.59	1029

The Lion Creek unit, which is believed to be all state-owned, contains some excellent timber. However, in some areas the unit has suffered a tremendous loss in the past through insect damage. The present infestation is rather high in infested trees per acre; however, the green stand per acre is also much higher than in other units.

UPPER PRIEST RIVER

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
7,700	11	.052	.47	400

Although the infestation in this area is apparently somewhat heavier than in 1936, it is not as yet serious. Most of the white pine is from 160 to 200+ age class, with some small areas of young stand. Very serious losses have occurred in spots throughout the area in the past. In some instances 100 percent of the pine has been killed over areas varying from 3 to 40 chains in diameter.

CARIBOU CREEK T. 63 N., R. 4 W.

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,900	2.7	.010	.37	59

There is a very poor stand of white pine on this unit. The area is open and rocky with much reproduction and hemlock. A large part of the best timber has been burned off in the past. Very little infestation other than an occasional infested tree was recorded.

TRAPPER CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
4,400	2.3	.016	.69	70

This area is north and adjacent to the Caribou Creek unit and is much the same as to type. Much of the area is open and rocky, with pole type lodgepole predominating. There is no infestation of importance on the unit.

TWO MOUTH CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
8,500	9.5	.020	.21	170

Although the white pine stand on this area is good in spots, there is an abundance of hemlock and spruce. The stands have suffered to some extent by old insect damage, but not to the extent of units farther north. There is no recent infestation of a serious character on the unit.

INDIAN CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
12,700	13	.030	.23	381

This is one of the larger units on the forest and is well stocked with white pine. It has suffered to a limited ex tent by insect damage in the past, but nothing more than a normal infestation exists at present.

HUNT CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
7,900	9.8	.040	.41	316

Only a normal infestation was found in the Hunt Creek area; approximately the same number of trees were killed by the mountain pine beetle in 1936 as in 1937. Much of the stand consists of ponderosa pine, lodgepole, and Douglas fir.

SOLDIER CREEK

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
9,500	9.5	.044	.46	418

Although the Soldier Creek unit has but a normal infestation in the stands, 22 injured trees along one and one-half miles of newly constructed road were found to have been attacked. There is a rather large number of injured trees along the road which could provide a favorable host and source of increase in the infestation.

NORTH FORK OF EAST RIVER

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
5,800	14.4	.021	.14	122

There was very little past or present insect damage recorded in this unit. The pine type is apparently very healthy and especially good along the creek bottoms.

MIDDLE FORK OF EAST RIVER

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
8,400	12.1	.013	.11	109

The infestation in the Middle Fork of the East River is relatively negligible. There has been some insect loss in the past, but not extensive. The white pine type is mostly confined to strips along the creek bottoms, while the slopes and ridges are lodgepole and mixed type.

OJIBWAY

Acres in area	Green WP per acre	Infested trees per acre	% of stand killed	Infested trees
11,000	8.5	.024	.28	264

The Ojibway unit includes a large number of scattered acres of white pine type near Boswell, Bear Paw Ridge, Ojibway Mountain, and Skookum Lake. Although the infestation is not serious over the unit as a whole, there is a small area of relatively heavy infestation near Skookum Lake. The stand just south of North Skookum Lake is largely overmature white pine and hemlock. Most of the infested trees occur along the road, where there are several groups. The infested area contains approximately 600 acres and has about 200 infested trees. Counts of trees infested in 1936 indicate there were approximately as many killed at that time. As this area will probably be logged during the coming summer, the danger of further infestation will probably be removed.

CONCLUSION

Except for a few areas, the white pine stands of the Kaniksu Forest are not being seriously damaged by the mountain pine beetle at present. The areas where serious damage is taking place may be listed as follows: Trout Creek T. 58 N., Rapid Lightning Creek, and the Upper West Branch. All three of these areas are being rapidly logged off, which should salvage the timber before further damage is done and have a favorable effect toward lowering the infestation. Ball Creek, which has a concentration of attacked trees along the creek bottom, should be closely watched to prevent a serious increase from developing unnoticed. Lion Creek should also be rechecked to determine further development in the white pine stands.

Very severe losses from insect damage have occurred throughout the northern part of the forest in the past. In many instances the destruction has been from 80 to 100 percent of the stands. Old kill is less noticeable but present in units to the south, where there seems to be a progressive decrease in severity.

Root fungus infection is quite prevalent in some parts of the forest. Of 2,579 green trees examined throughout the forest, .9 percent were infected with root fungus. The insect-infested trees were found to be 13.2 percent infected with fungi, which seems to indicate that the insects show a preference for fungi-infected trees. While root fungi infection was found throughout the forest, there were several areas where it was very prevalent. These areas, as a rule, had been

depleted by some other agency in the past such as fire, logging, and insect damage. The following areas were found to have the highest percentage of root fungus infection in the green stand: Rapid Lightning Creek 2.7%, Smith Creek 1.7%, Caribou Creek (Pack River drainage) 1.8%, Blacktail 2.9%, and Lion Creek 3.4%. In these areas insect-infested trees were also found to have a relatively higher root fungus infection.

Defoliation:

An outbreak of defoliating insects--a species of looper--has occurred throughout northern Idaho. This insect has defoliated rather large areas of Alpine type along the higher ridges on several forests. Although no heavily defoliated areas were examined on the Kaniksu Forest, large patches of brown foliage were seen along the east side of Priest Lake near Chimney Rock. Several areas of lighter defoliation were encountered in the northern part of the forest, and adults of the insect were found in practically all of the stands. The Upper Priest River area seemed to contain the largest number of adults. They were so thick in spots as to nearly cover the ground. Ball Creek, Caribou Creek, Pack River, Hunt Creek, and Soldier were also heavily infested with adults, but no noticeable defoliation had occurred.

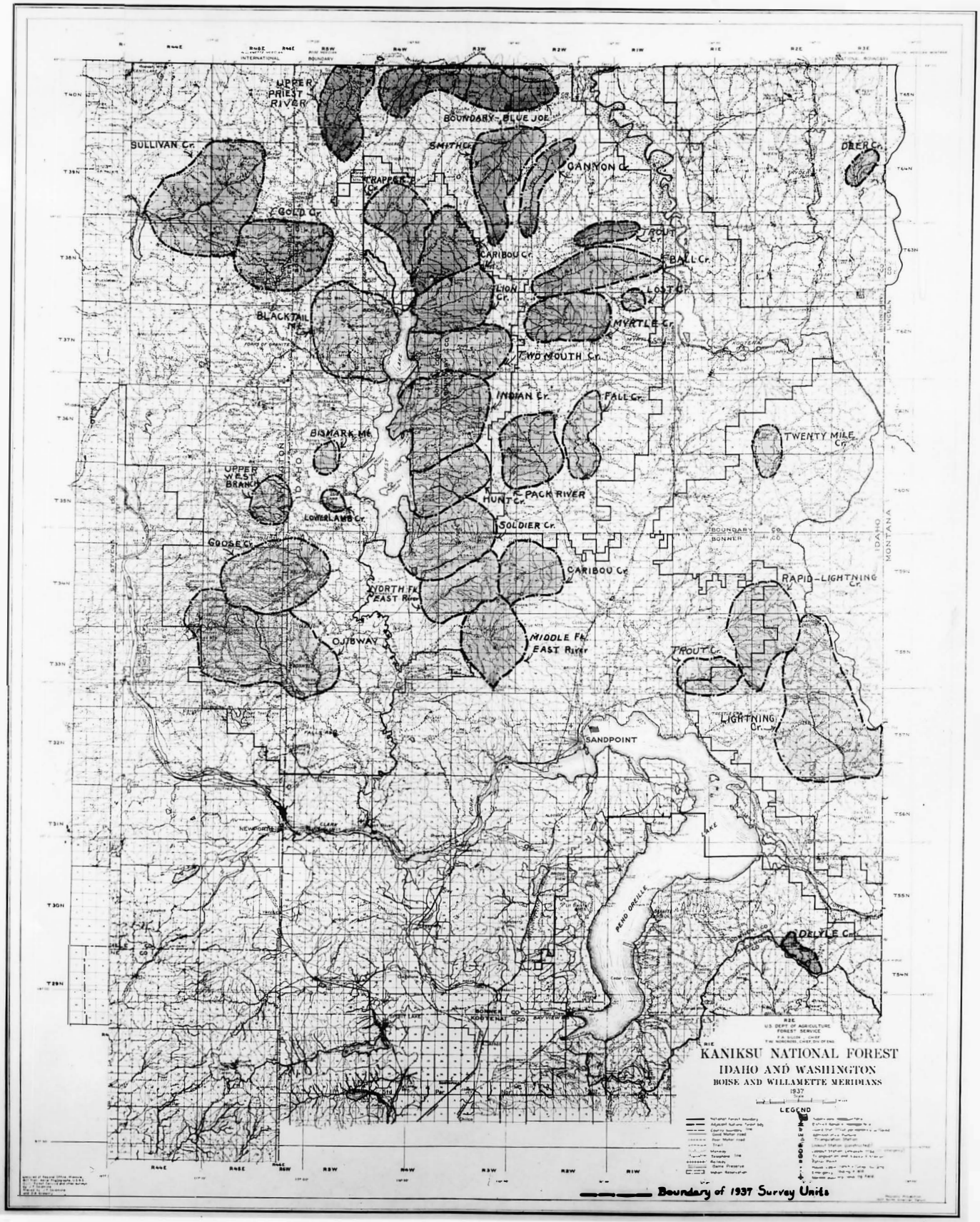
It is hard to predict the future trend of the defoliator infestation, but it is felt that serious damage may be done to the stands if there is a further increase in their numbers during 1938.

Respectfully submitted,

Tom T. Terrell
Scientific Aide

COST ANALYSIS OF THE KANIKSU SURVEY

Transportation	$ 189.50
Subsistence	317.72
Wages	1,464.00
Miscellaneous and equipment	4.55
Terrell's salary	175.00
Total field cost	$2,150.77
Effective man-days	191
Noneffective man-days:	
Cook 34½, travel 23, holidays and Sundays 76, camp 9, training 1	143½
Supervision	60
Total man-days	394½


UPPER PRIEST RIVER
BOUNDARY - BLUE JOE
SULLIVAN Cr.
SMITH Cr.
CANNON Cr.
DEER Cr.
TRAPPER Cr.
GOLD Cr.
TROUT Cr.
CARIBOU Cr.
BALL Cr.
LION Cr.
LOST Cr.
BLACKTAIL Mt.
MYRTLE Cr.
TWO MOUTH Cr.
INDIAN Cr.
FALL Cr.
BISMARK Mt.
TWENTY MILE Cr.
UPPER WEST BRANCH
HUNT Cr.
PACK RIVER
LOWER LAMB Cr.
SOLDIER Cr.
GOOSE Cr.
CARIBOU Cr.
RAPID-LIGHTNING Cr.
NORTH FK EAST River
OJIBWAY
MIDDLE FK EAST River
TROUT Cr.
LIGHTNING Cr.
SANDPOINT
NEWPORT
PEND OREILLE LAKE
DELYLE Cr.
IDAHO
WASHINGTON
MONTANA
BOUNDARY CO.
BONNER CO.
KOOTENAI CO.
R2E
U.S. DEPT. OF AGRICULTURE
FOREST SERVICE
KANIKSU NATIONAL FOREST
IDAHO AND WASHINGTON
BOISE AND WILLAMETTE MERIDIANS
1937
LEGEND
Boundary of 1937 Survey Units

INSECT INFESTATIONS OF THE KANIKSU NATIONAL FOREST 1937

- - - -

SUMMARY AND RECOMMENDATIONS

James C. Evenden

In his report of insect conditions of the Kaniksu National Forest Mr. Terrell describes infestations of the mountain pine beetle within the white pine stands of the many survey units which vary considerably in severity. This variance is difficult to explain, though obviously the answer rests in the different environmental conditions which are present within the scattered and somewhat isolated white pine areas. Unfortunately, at this time we are unable to properly evaluate those factors which would permit an early recognition of latent bark-beetle outbreaks prior to the occurrence of marked visual changes in the status of the infestation. A study of the behavior of mountain pine beetle infestations in white pine is now being conducted for the purpose of securing data which will make the early recognition of such situations a reality. With such information available control measures could be directed against dormant outbreaks which are now considered as normal infestations, at a lower cost of operation and a marked reduction of timber losses.

Though on the Kaniksu National Forest there are no infested areas which under existing circumstances are overly alarming at this time, there are several situations which will warrant further consideration during the coming field season. As Mr. Terrell has stated, the

most serious infestations of the mountain pine beetle are located in the Trout Creek, Rapid Lightning Creek, and Upper West Branch drainages. Though the white pine is now being logged from these areas, they should still be regarded as potentially serious situations.

In the Rapid Lightning Creek unit there is a fairly heavy mountain pine beetle infestation distributed throughout the entire drainage, with an area of some 880 acres harboring a severe outbreak of 1.8 infested trees per acre, or 5.15 percent of the residual white pine stand. If this area of concentrated infestation can not be logged during the coming season, the possibility of instituting control as a salvage cutting should be considered. The bark-beetle situation in this drainage is complicated by the large numbers of cull logs left during the logging operation. As during the past season 20 percent of this material was infested by the mountain pine beetle, it will no doubt contribute to the maintenance of the bark-beetle population at an aggressive status, which will destroy the sometimes beneficial entomological effects of logging and result in destruction of many standing trees. Though control measures are perhaps unwarranted during the process of logging, care must be exercised in order to prevent unnecessary losses in residual and adjacent timber stands following the close of the operation.

The situation in the Upper West Branch unit should also be viewed with considerable apprehension. A rather severe infestation of the mountain pine beetle is concentrated in the white pine stands

along the bottom of this drainage. As most of this area will be included within the 400-foot strip of timber which is to be left along the roadside, care must be devoted to this scenic strip of timber if excessive timber losses are to be prevented.

In addition to these areas there is a spot of concentrated infestation within the Ojibway unit. This area is just south of North Skookum Lake and is owned by the State of Washington. The infestation in this area has been called to the attention of the State Forester, and it is understood that the area will be logged during the coming season. The seriousness of the situation warrants further consideration if the infested trees are not removed at that time.

The existence of rather severe mountain pine beetle infestation within the areas of the Kaniksu National Forest which are now being logged leads one to wonder as to the relation which such operations may bear to the present situation. Though undoubtedly large accumulations of cull logs contribute somewhat to the building of aggressive beetle populations, perhaps the presence of so many cull logs can be taken as an indication of decadent trees which are more susceptible to beetle attack.

The Ball Creek, Lion Creek, and possibly the Pack River units should be rechecked during the 1936 season to determine the existing status of the infestation. Though none of the other units would appear to be alarming at this time, the change from normal to epidemic conditions occurs so rapidly that all potentially dangerous area must

be kept under constant surveillance to prevent the development of destructive outbreaks.

These situations will be reexamined by officers of the Forest Insect Laboratory as early in the season as possible in order to permit the recommendation of fall control if such action is considered necessary.

Respectfully submitted,

James C. Evenden
Entomologist